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REVIEW OF DEVELOPMENTS IN THE INSURANCE MARKET

Alternatives for insurance of catastrophes, environmental impairments and large risks in developing countries

Study by the UNCTAD secretariat

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PREFACE

(i) In accordance with the Work Programme of the Standing Committee, established at its first session on Insurance, from 1 to 5 February 1993, requests the Committee, under part B. Fostering Competitive Insurance Services, "to examine alternative mechanisms to meet the insurance and reinsurance needs in respect of:

- Catastrophes;
- Environmental impairments;
- Large risks;

particularly in times of reduced reinsurance capacity".[1]

(ii) This study raises the issues to be addressed by all countries wishing to have in place insurance and risk control programmes to cover different types of catastrophes, environmental impairments and large risks. It cannot offer a universal solution, but does suggest a common methodology. The programmes required for each country or region will necessarily have to be tailored to its exposures and financial capabilities. Chapter I summarizes the component areas of insurance and risk control programmes and outlines the role of the State. Chapter II explains recent changes in world insurance markets for catastrophes and large risks and their implications for developing countries. In chapter III a distinction is drawn between the different approaches to insurance of catastrophes and the more familiar forms of non-life insurance, and some reasons for the absence or non-utilization of catastrophe insurance are examined. Chapter IV introduces methodologies to choose the components of a catastrophe insurance and risk control programme. Lastly, chapter VII brings together a summary of recommended action.

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1 TD/B/CN.4/19.

CHAPTER 1

INTRODUCTION

A. Global perspectives

1. This document discusses and advises on approaches that can be taken for risk control, insurance and reinsurance of very large risks, and against environmental impairments and catastrophes, which would destroy many of the productive assets of a country. The provision of adequate precautions can go a long way to safeguarding development by minimizing losses and ensuring that funding will be available for reconstruction should a disaster occur.

2. The Los Angeles earthquake, European floods, Australian bush fires, are all catastrophes that have occurred during the first few weeks of 1994, and for those who were not affected by these disasters the details of lives lost, value of property destroyed and the cost to the insurance industry have been publicized by the media all around the world.

3. Those affected by catastrophes of equal or even more serious magnitude in the developing countries might sometimes question why their own immediate disasters often receive far less international attention. Some may also ask why a report that examines alternative mechanisms to meet the insurance and reinsurance needs of developing countries in respect of Catastrophes, Environmental Impairments and Large Risks begins by comparing the degree of media coverage of catastrophes in the developing countries with the rest of the world.

B. Areas for action

4. The connection between the inability of the media to provide comprehensive reporting of developing country catastrophes and for insurers to be in a position to cover these events adequately is that quantifiable information about catastrophe risks in a large number of developing countries is not easily accessible or may not exist. This applies to all kinds of information necessary to construct an insurance or alternative solution to provide for catastrophes, which includes, *inter alia*:

- history of exposure to the catastrophe in question;
- values at risk;
- location and accumulation of values;
- rebuilding costs and potential problems;
- proportion of values at risk insured;
- extent to which catastrophe risk is insurable in the local market.

5. This paper is not going to list Catastrophes, losses of Large Risks or as a result of Environmental Impairments, but is to consider in respect of these risks the processes to identify the protection needed, risk control measures to reduce the effects of damage and associated costs, the extent to which the risk can be carried locally, alternative arrangements to provide cover and the role of government as sponsor of risk management activities, legislator and ultimately insurer of last resort. The legislation envisaged should be designed to ensure that the government is not called upon to contribute when alternative commercial solutions are available. Government assistance can be made conditional upon claimants having first taken out commercially available insurance.

C. Catastrophes differ but financial solutions are similar

6. As regards financial protection, the available mechanisms follow the same principles in order to provide indemnity should an event result in losses from either Catastrophe, Environmental Impairments or the insurance of Large Risks. The features that separate the markets and organizations prepared to provide cover for these contingencies are the very different and independent nature of each of the risks involved. For example some insurers may be conversant with risks from Typhoons and Tropical Storms in one part of the world while not being prepared to cover Earthquake or the effects of extremely Cold Weather in another part of the world, and vice versa.

7. The alternative choices and actions to be taken follow the same principles whether it is an individual, a business, an insurer, the insurance sector or the government of a country that needs to ascertain its ability to finance risk. Once the whole range of risks to be faced is identified and the available financial resources are known, decisions can be taken on the most effective way to employ the available resources. The same processes will enable identification of the points at which the financial resources become exhausted and it

is no longer possible to effect any form of insurance. After such a point is reached one is forced to rely upon the national government or the international community for aid.

D. Physical risk control

8. For physical protection, risk control measures need to be introduced. These are as important as insurance since their role is to avoid or reduce the magnitude of losses. The numerous measures can be as diverse as the construction of flood defences, introduction and monitoring of building standards and introduction of legislation to control urban land use as well as control of rural agricultural practices.

E. The role of the State

9. The State has a major role to play to encourage both financial and physical measures by legislation, supervision, physical action in the public domain, and also as the insurer of last resort when available financial protection is exhausted.

10. The trade-related importance of ensuring that catastrophe insurance is available must not be overlooked. Lenders are becoming increasingly insistent that assets used as security for loans to finance trade, or indeed for any other purpose, are insured against catastrophe risks. Recent experience in the United States with West Coast earthquake risks and East Coast exposure to hurricanes, and in the United Kingdom with damage from terrorist bombings have heightened the demands of lenders that catastrophe cover be taken out by borrowers before finance can be made available. The threat to the commercial activities within a country that finance would become conditional upon the availability of catastrophe insurance has provoked governments to become involved. Both United States and United Kingdom Government departments have taken action to introduce legislation and government guarantees to ensure that, with the cooperation of the insurance sector, catastrophe cover could continue to be purchased for those commercial sector assets pledged as security for loans to finance commercial activity.

CHAPTER II

BACKGROUND TO CHANGES IN PROVISION OF WORLDWIDE CATASTROPHE INSURANCE

A. Recent history – the "soft" market

11. For most of the 1980s there has been a "soft" market in international insurance and reinsurance. A "soft" market may be defined as conditions where, on balance, there are more sellers willing to accept insurance business than there are buyers with risks to be covered. This results in prices being depressed to the extent that most insurers and reinsurers are unable to achieve better than marginal or break-even results, and in many cases suffer severe losses.

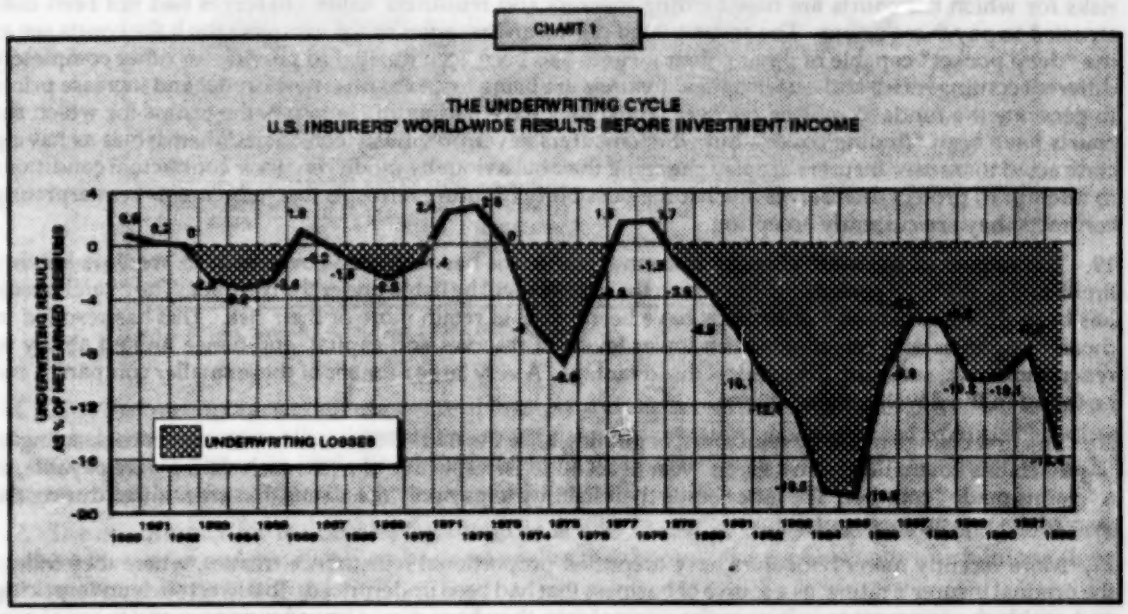
12. In the mid-1980s between 1985 and 1987 there was a short-lived correction to the unsustainable "soft" market conditions, but for the remainder of the decade competition, combined with oversupply of capital in the international markets, encouraged underwriters to accept all types of business at premiums which inevitably led to serious losses for the world's international insurance markets.

13. Insurers of international business, reinsurers, and in particular those insuring catastrophe risks, do not expect a constant rate of return each year. Their business aims to balance the losses over a period of years by the accumulated profits from other years. Accumulated reserves from profitable years, and the shareholders' capital, must be both sufficient to pay the amounts by which claims exceed premiums in unprofitable years and still leave a large enough capital balance for the insurer to have adequate solvency to continue in business. The accumulated reserves and capital must be sufficent to sustain the business until prices and loss patterns change and profits can again replace the reserves and capital paid out during loss-making years.

14. The prolonged competitive soft market of the 1980s has seriously damaged international insurers' and reinsurers' capital. As a consequences their ability to offer low prices and trade at slim margins has been reduced, while purchasers have become used to buying cover for very high indemnity limits at unsustainably low prices.

15. Chart 1 shows that worldwide underwriting results for United States insurers have produced a net loss for the industry over many years. The principle of insurance is not one of wealth transfer. Insurance is the mutualization of losses whereby the costs of the few unfortunate enough to suffer losses are shared amongst the many in direct proportion to the values at risk and probability of loss. The long-run inflation-adjusted result for the industry, after deduction of the costs of administration, and a margin for profit which is the reward for the use of capital, must be neutral if the industry is to be able to maintain its capacity to pay claims at the average annual cost encountered to date. If the average annual claims cost is to rise there is no alternative in the long term than for the total premiums to increase correspondingly.

CHART 1


THE UNDERWRITING CYCLE
U.S. INSURERS' WORLD-WIDE RESULTS BEFORE INVESTMENT INCOME
UNDERWRITING RESULT AS % OF NET EARNED PREMIUMS
UNDERWRITING LOSSES

Source: Aggregates & Averages, A.M. Best Co. Inc.

16. Outside capital, whether subscribed by private shareholders or governments, can only be regarded as funds which are lent or introduced as margin to provide the liquidity for the resultant potential liability to pay even larger losses. Larger claims payments must in the long term be matched by the insurance industry's receiving equivalent larger premium payments which, when combined with associated investment income, will compensate for the outflow of claims over a period of years. If the liquid funds provided by the outside capital are used to pay claims but are not replaced from premiums and investment income, a contraction in the ability of the insurers to write new business and renew existing business will occur. Insurers' persistence in continuing to accept business throughout most of the 1980s at prices which continually resulted in serious overall losses has produced just this situation with a resultant serious contraction in "capacity".

B. Readjustments in today's market

17. We are now witnessing a period of readjustment following the prolonged underpricing of the 1980s. Existing insurers are raising prices so that business may be written on the basis of the long-term average of premiums and claims being in equilibrium. Those insurers with relatively small losses need to replace the capital that was eroded in the 1980s. The higher premium levels being obtained in the market should result in a return to profitability, which will allow insurers to increase their reserves and underwriting capacity. Completely new insurers are also attracted to commence underwriting under these conditions. While prices being asked by the market are likely to be at a level that would allow insurers to re-establish reserves that have become eroded when prices were too low, new insurers are presented with the opportunity to earn higher than average profits. Already new sources of international capital have come together to specialize in catastrophe underwriting now that rates and conditions are perceived to offer the prospect of a satisfactory return. Of the new capital subscribed to specialize in catastrophe insurance, the major proportion has gone to the Bermuda market. During 1993 10 new insurers were established in Bermuda. The combined initial capital for these new ventures amounts to over US$4 billion. Bermuda was chosen as the market in which to establish these new catastrophe insurers because legislation, regulation and supervi-

sion relating to international insurance operations is perceived as encouraging efficiency. Bermuda also seems to offer some of the world's lowest costs for operating such types of insurance.

18. The market conditions of the 1980s, which encouraged under-pricing, as well as the change in interpretation of strict legal liability by the courts, particularly in the United States, have presented international reinsurers with no choice other than to alter significantly the contractual terms on which they will do business. Courts, particularly in the United States, have moved towards the "deep pocket" approach in their awards by "finding cover" for circumstances which insurers and their insureds never intended to cover under old insurance policies. These policies had not been priced at a high enough level to include the risks for which the courts are now holding insurers and reinsurers liable. Reserves had not been constructed to pay these claims. The accumulated capital and reserves of the insurers which the courts see as the "deep pocket" capable of paying their awards had been accumulated to provide for other completely different contingencies and catastrophes. Insurers are being forced to raise new capital and increase prices to generate the funds to replace reserves which they have had to utilize to pay the claims for which the courts have been "finding cover", but which insurers never previously considered themselves as having contracted to insure. Insurers are also changing their behaviour by modifying their contractual conditions to attempt to protect themselves against the possibility of future retrospective judgements reinterpreting contracts they are currently accepting.

19. The impact of the main changes in contractual terms has restricted cover both in absolute liability limits and in the time periods during which the insurers will be liable under the contract. The overall result has been that insureds and reinsureds have been made to retain more of their risk. This has resulted in those companies and reinsureds with lower levels of reserves and capital, and hence limited ability to retain more risk, suffering the greatest disadvantage. A very large number of these smaller companies can be found in the developing countries.

20. The first change made by reinsurers, beginning after the mid-1980s, was to move from contracting to pay all claims emanating from a given "year of account", irrespective of when such claims were payable, to a "claims made" contract. The latter limits their liability to pay only the claims that are notified during the year of the reinsurance contract.

21. More recently many reinsurers have identified proportional reinsurance treaties, where they follow the original insurer's rating, as a source of business that had been underpriced. To correct such underpricing and enable the reinsurer to influence the original rate, they have discontinued writing many types of proportional reinsurance, replacing this by non-proportional excess of loss, stop loss and aggregate excess covers where the reinsurer is able to set the formula that determines the cost of cover and the minimum price he will receive under the contract.

C. Implications for the developing countries' insurance requirements of the reduction in capacity, hardening rates and changes in conditions within the international insurance markets

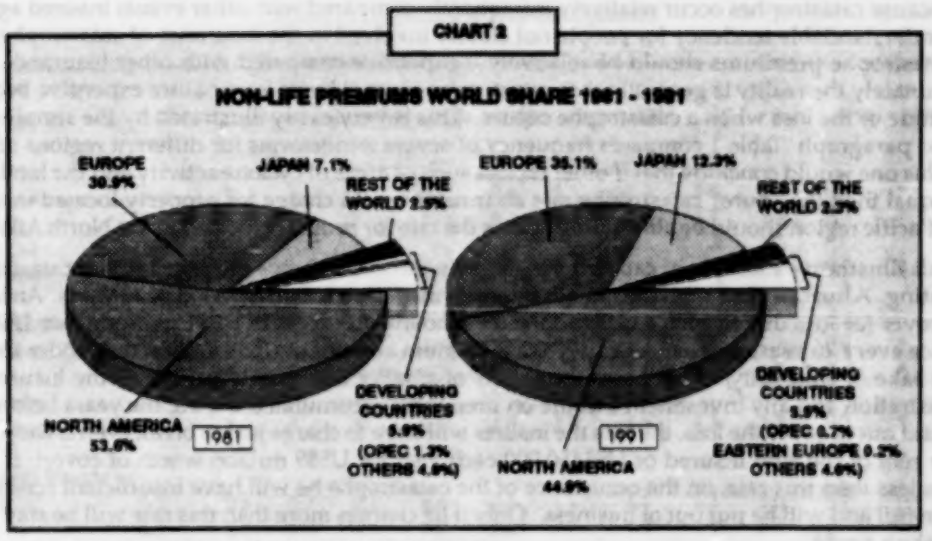
22. Whilst the insurance sectors of many developing countries are experiencing growth rates well in excess of the rate of growth for the total world markets, their world share has shown no measurable increase due to their small size.

23. Chart 2 shows that different rates of growth in world insurance markets resulted in the overall share of developing countries decreasing during the period 1981 to 1991. This largely reflects the rapid rise of the Japanese market during that period, which is also largely responsible for the reduced share of the United States of America.

24. As the underpricing of premium rates for the rest of the world is corrected we will witness an overall reduction in the share of the developing countries in world markets, unless premiums from the developing countries are also increased in at least the same proportion.

25. In terms of the markets' absolute ability to accommodate the risks of the developing countries this is not all bad news. Exposures in the developing countries even for catastrophe limits are, relative to the developed countries, small, so that the ability of international insurers to cover such risks fully is far less constrained when compared with accumulations of much higher values in the developed countries.

CHART 2



Source: SIGMA, Swiss Re, 5/1983 and 2/1993, UNCTAD analysis

26. That the overall capacity of international insurers and reinsurers has been reduced is clear. Estimates of market practitioners are that the markets' ability to accept premiums has decreased from US$20 billion in 1992 to US$15 billion in 1993. This means that reinsurers can, for as long as demand exceeds supply, choose which business they will accept and which they will refuse.

27. The opportunity for the developing countries is now to review the adequacy of existing cover and present their risks and conduct their business so that they become the markets with which international insurers prefer to do business.

28. Cooperation between the insurance industry, national governments and regional associations in the maintenance of local and regional information on accumulation of risk, loss histories and costs will enable more accurate underwriting and calculation of the correct premium that should be paid to reflect the true cost of the risk.

29. Legislation to enforce improved local construction standards and safety regulations will also assist in reducing the overall loss costs to insurers and the financial waste for the economies of the countries.

30. "Alternative mechanisms" are considered in later chapters of this study, but in view of the need for very large initial capitalization they are unlikely to be a realistic option in the short term for many developing countries seeking alternatives to existing catastrophe cover available in the international insurance market. However, in the longer term the establishment of collective arrangements, which may include creation of pools with self-funding or mutual contributions up to pre-determined liability limits, may raise the levels from which it is necessary to seek stop-loss and catastrophe reinsurance from the international market. Greater retentions in the working layers and lower level stop-loss covers may also enable developing countries to purchase higher levels of catastrophe reinsurance, which are often currently not insured, rather than passing premiums to the international market to act like a banker for proportional participation in working layers.

D. Pricing catastrophe insurance

31. Underwriting principles for catastrophe covers differ significantly from the insurance of risks which occur with annual frequency and much lower severity in terms of the size of loss for any one incident.

32. Almost all business in most countries is conducted around a financial and fiscal accounting period of one year. For most business assessing the results on an annual basis is appropriate. For insurance of catastrophes a review period of only one year is quite inappropriate to determine whether premium payments are adequate to accumulate sufficient funds to pay for a loss when the frequency of occurrence may be once every 20 years or more. There is thus a strong argument for the duration of catastrophe insurance contracts to be for much longer than one year since annual contracts also mitigate against building funding.

33. Because catastrophes occur relatively infrequently compared with other events insured against, there is an understandable tendency for people not closely involved in the insurance of catastrophes to believe that catastrophe premiums should be relatively inexpensive compared with other insurance premiums. Unfortunately the reality is generally that catastrophe cover is by its very nature expensive because of the magnitude of the loss when a catastrophe occurs. This is very easily illustrated by the simple example in the next paragraph. Table 1 compares frequency of severe windstorms for different regions of the world. From this one would conclude that if other factors such as areas of cyclone activity and the land area at risk were equal then the "pure" catastrophe rate an insurer would charge for property located in the Western North Pacific region should be almost three times the rate for property located in the North Atlantic region.

34. This illustrative example of catastrophe loss by windstorm shows the principles of catastrophe insurance rating. A hurricane or typhoon of high intensity may have a return period of 20 years. An insurer may grant cover for loss due to such a catastrophe for amounts in excess of US$1 million up to US$10 million and once every 20 years will expect to pay the maximum amount of US$9 million due under the policy. If, for the sake of simplicity, one ignores the effects of smaller loss events as well as the insurer's costs of administration and any investment income on premiums accumulated during the years before they have to be paid out to cover the loss, the rate the insurer will have to charge just to break even is easy to calculate - 5 per cent of the sum insured or US$450,000 each year for US$9 million worth of cover! If the insurer charges less than this rate, on the occurrence of the catastrophe he will have insufficient funds to pay the claim in full and will be put out of business. Only if he charges more than this rate will he stay in business and make a profit.

35. The risk premium arrived at by using more complex calculations based upon the principle described in paragraph 45 produces the insurers' "rate on line" for each given catastrophe for a particular location. The percentage rate has the advantage of being non-discriminating in that those with the largest sums insured or the greatest probability of loss, because of a shorter return period for the catastrophe, will pay proportionately more than those with small sums insured or a longer return period for the catastrophe.

36. Severity and a shorter return period for catastrophes reflect the relative frequency of occurrence of each contingency.

37. The price for catastrophe insurance is, however, not only determined by actuarial assessment but is influenced significantly by competition in the insurance market place. Since the insurer is aiming to achieve an average price, perhaps over 20 years or more, which reflects the "pure" actuarial catastrophe rate, the price in the market can fluctuate quite significantly. The greater the amount by which insurers have reduced their rates below the long-term "pure" rate in periods of intense competition, characterized by "soft" markets and overcapacity, the greater the insurers' need to increase rates above the long-term "pure" rate when the market "hardens" and capacity is reduced, in order for the insurers to achieve an average of the long-term "pure" rate.

Table 1
Average Frequency of Tropical Cyclones

Basin and Stage	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
North Atlantic													
Tropical storms	•	•	•	•	0.1	0.4	0.3	1.0	1.5	1.2	0.4	•	4.2
Hurricanes	•	•	•	•	•	0.3	0.4	1.5	2.7	1.3	0.3	•	5.2
Tropical storms and hurricanes	•	•	•	•	0.2	0.7	0.8	2.5	4.3	2.5	0.7	0.1	9.4
Eastern North Pacific													
Tropical storms	•	•	•	•	•	1.5	2.8	2.3	2.3	1.2	0.3	•	9.3
Hurricanes	•	•	•	•	0.3	0.6	0.9	2.0	1.8	1.0	•	•	5.8
Tropical storms and hurricanes	•	•	•	•	0.3	2.0	3.6	4.5	4.1	2.2	0.3	•	5.2
Western North Pacific													
Tropical storms	0.2	0.3	0.3	0.2	0.4	0.5	1.2	1.8	1.5	1.0	0.8	0.6	7.5
Typhoons	0.3	0.2	0.2	0.7	0.9	1.2	2.7	4.0	4.1	3.3	2.1	0.7	17.8
Tropical storms and typhoons	0.4	0.4	0.5	0.9	1.3	1.8	3.9	5.8	5.6	4.3	2.9	1.3	25.3
South-West Pacific and Australian Area													
Tropical storms	2.7	2.8	2.4	1.3	0.3	0.2	•	•	•	0.1	0.4	1.5	10.9
Hurricanes	0.7	1.1	1.3	0.3	•	•	0.1	0.1	•	•	0.3	0.5	3.8
Tropical storms and hurricanes	3.4	4.1	3.7	1.7	0.3	0.2	0.1	0.1	•	0.1	0.7	2.0	14.8
South-West Indian Ocean													
Tropical storms	2.0	2.2	1.7	0.6	0.2	•	•	•	•	0.3	0.3	0.8	7.4
Hurricanes	1.3	1.1	0.8	0.4	•	•	•	•	•	•	•	0.5	3.8
Tropical storms and hurricanes	3.2	3.3	2.5	1.1	0.2	•	•	•	•	0.3	0.4	1.4	11.2
North Indian Ocean													
Tropical storms	0.1	•	•	0.1	0.3	0.5	0.5	0.4	0.4	0.6	0.5	0.3	3.5
Cyclones[1]	•	•	•	0.1	0.5	0.2	0.1	•	0.1	0.4	0.6	0.2	2.2
Tropical storms and cyclones[1]	0.1	•	0.1	0.3	0.7	0.7	0.6	0.4	0.5	1.0	1.1	0.5	5.7

• Less than 0.05 [1] Winds ≥ 48 knots

Monthly values cannot be combined because single storms overlapping two months were counted once in each month and once annually.

Source: World Map of Natural Hazards – Munich Reinsurance Company

CHAPTER III

DEFINING CATASTROPHE INSURANCE - COMPARATIVE VIEWPOINTS OF THE DEVELOPING COUNTRIES AND THE INTERNATIONAL PROVIDERS

A. Definitions should be clear and reflect circumstances

38. Natural and man-made disasters are often described as "catastrophes".

39. Webster's dictionary describes a catastrophe as "a momentous tragic event ranging from extreme misfortune to utter overthrow or ruin", or a "violent and sudden change in a feature of the earth".

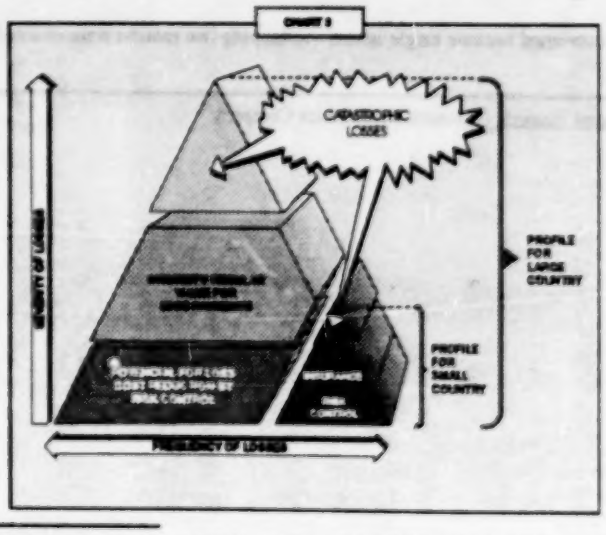
40. The insurance definition is more restricted and usually implies the occurrence of very large occasional losses[2] and much of the emphasis is related to the values of insured damage. It should be emphasized that the catastrophe risks that operate to cause such losses are quite independent of the more frequent everyday risks more commonly insured against. To this extent insurance and funding for catastrophes is a separate activity.

41. Swiss Reinsurance Company in its latest regular review[3] of natural catastrophes and major losses reflects current international insurers' definition of a catastrophe by including only those losses which in 1992 inflation-adjusted values (United States rate of inflation) reached or exceeded the following criteria:

Number of people killed	20	
or		
Number of people injured	50	
or		
Insured damage:	water-borne traffic	US$11.3 million
	aviation	US$22.5 million
	other loss categories	US$28.1 million

42. Whilst the employment of constant criteria to determine which large losses to classify as catastrophes is important for insurers analysing a portfolio of international business, one must recognize the limitations of such an approach in trying to classify the catastrophe insurance exposures of many developing countries. For example a loss of US$20.0 million in a country with a US$34 billion GDP and US$21,000 per capita income may be unwelcome but sustainable (United Arab Emirates) but for a country with US$115 million GDP and US$697 per capita income (Samoa), very severe long-term damage would have been done to that country's economy.

43. The well-known risk management triangle illustrates the principle of catastrophe cover and is admirably suited to demonstrate the vastly different levels of severity at which catastrophe protection will be sought by countries and business with differing economic circumstances.



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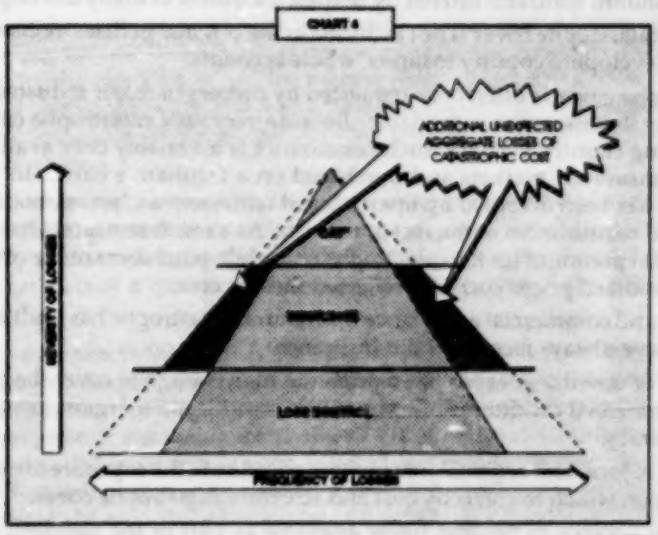
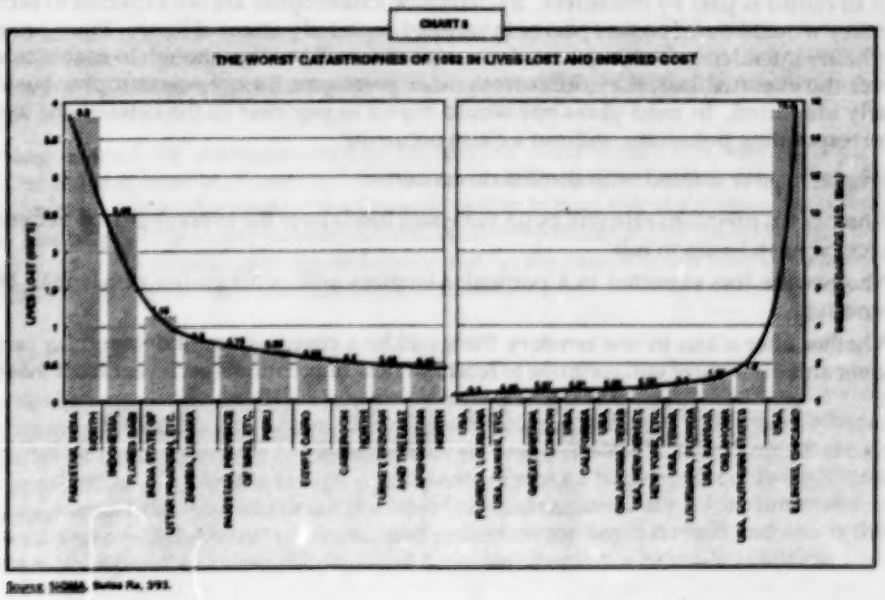
[2] Carter, R.L., Reinsurance, Great Britain, Kluwer Publishing Ltd., 1979, p. 192.

[3] Sigma, Economic Studies, 3/92.

44. While we have concentrated upon the definition of catastrophe which places emphasis on a single event generating very large loss costs, over a period of a year the total value of losses for an insurer or the insurance industry of a country can also reach unexpected catastrophe levels. This situation is caused by a much higher frequency of claims below catastrophe value. The risk of unusually high aggregate losses producing claims costs beyond the capabilities of an insurer or the insurers in one region is a risk that threatens insurers' stability as much as the occurrence of individual catastrophes. In developing countries the need to protect against high levels of aggregate losses is frequently overlooked when considering the adequacy of catastrophe protection programmes.



45. Relative to insurance industry practice in the OECD countries, in most developing countries insurers buy very little catastrophe reinsurance cover. The developing countries would appear to suffer at least as many natural catastrophes as the countries of the OECD and the majority of people killed and injured annually as a result of catastrophes are situated in these developing countries.



46. Chart 5 which highlights the predominance of financial loss resulting from catastrophes in OECD countries compared with mainly human suffering recorded for catastrophes in developing countries is very significant. One would expect high levels of material damage to have occurred in addition to the tragic levels of human suffering recorded for the catastrophes in developing countries.

B. Reasons for absence of catastrophe insurance

47. In OECD countries insured losses are the basis for recording the majority of material damage costs of catastrophes. Insured losses in developing countries have been insufficient to register material damage of sufficient size to be classed as catastrophic losses in financial terms. Explanations of why many of the developing countries buy very little catastrophe insurance include the following:

- Absence of cover for catastrophe perils (i.e. earthquake, flood, typhoon, etc.) as a component of the standard contracts offered by domestic insurers in many developing countries.
- Because catastrophe cover is not included in the original policies, reinsurance is not bought to protect developing country insurers' whole accounts.
- Catastrophe cover is often only requested by owners of major industrial risks and can be offered only if reinsurance is available. Because very little catastrophe cover is written in many developing country markets, such reinsurance is invariably only available from the international reinsurance markets and purchased on a facultative basis. In the past much of this business has been accepted by international reinsurers as "accommodation" business by extension to reinsurances of the rest of the risk. As a result reinsurers have often been charging insufficient premium for the catastrophe risk while purchasers of the cover were led to believe such subsidized prices correctly reflected the risk cost.
- Cultural and commercial acceptance that natural catastrophe has traditionally been a risk that people have always faced without insurance.
- Inability or unwillingness to pay a premium high enough to cover the catastrophe risk due to local commercial conditions of competition, insufficient margins, low disposable incomes or just obduracy.
- Absence of local and regional information about both the exposure to catastrophes and values at risk upon which to correctly cost and structure catastrophe cover.

48. For catastrophe insurance to become freely available as part of the standard policy cover in many developing countries, co-operation should be fostered between the domestic insurers, government, international catastrophe reinsurers and insurance buyers within the developing countries. The aim should be to promote understanding of the very different principles behind catastrophe insurance compared with shorter-term annual covers.

49. The long-term nature of catastrophe insurance is often not properly understood because insurers in developing countries are most familiar with proportional coinsurance and reinsurance in which each year a proportion of all claims is paid by reinsurers. By definition catastrophes are not expected to occur annually, otherwise they would be accepted as part of the annual expected pattern of losses. Since premiums to cover catastrophe are intended to build up a fund over time that will be large enough to enable catastrophe insurers to cover the eventual loss, they differ from other premiums for non-catastrophic business and should be clearly identified. In most years one would expect to pay over to the catastrophe insurer the whole of the corresponding premiums without a claim occurring.

50. The catastrophe insurer is faced with three main concerns:

- Whether his premium rate will build sufficient funds over the average period between losses to cover such losses in full.
- Whether the loss expected in a particular territory will occur earlier rather than later than expected.
- Whether after a loss in one territory there will be a continuation of demand for catastrophe cover and the insurer will continue to receive a flow of premiums each year from that territory.

CHAPTER IV

DETERMINATION OF THE STRUCTURE FOR A CATASTROPHE INSURANCE PROGRAMME

A. The ultimate reliance of all alternatives upon the same principles of security and mutualization

51. All mechanisms mobilizing funds to provide indemnity for catastrophe losses employ the basic insurance principle of spreading the cost of the losses of the unfortunate few across the many, most of whom will not have been affected by the catastrophe. At the highest levels of risk this occurs on a worldwide basis. However in funding for catastrophes this is not an annual calculation but will reflect the periodicity of the catastrophe concerned. Some catastrophes occur with frequencies of 20 years, others every 50 years, some may not happen for 100 years.

52. Whether sharing the cost of losses is achieved by voluntarily subscribing to one of the forms of insurance, or whether the national government creates a relief programme which is ultimately funded from the taxes on the population, or international aid is provided and also ultimately funded by taxes and voluntary subscriptions, the major costs of a catastrophe can only be met by one of the methods of contractual or imposed mutualization.

53. The importance of attention to the security of any catastrophe insurance arrangements cannot be overemphasized. There is a well-known adage which compares insurance against catastrophe to a parachute. The most important factor in selecting a parachute is that it will work if it is needed. Purchase of the product with the lowest price or restricting the choice of suppliers can lead to a decision that is unreliable and has disastrous results. When deciding upon any arrangement to provide for catastrophe protection, whether this is conventional insurance, reinsurance, private or government mutual pooling arrangements, very careful attention has to be paid at the beginning and continually thereafter to ensure that the arrangement has the committed funds available should a catastrophe occur.

54. Before a catastrophe protection arrangement can be made it needs to be clear for precisely what events the scheme is intended to provide protection, and also the extent to which the scheme will provide compensation. For example the contingency against which protection will be provided needs to be specified: bush fire, earthquake, flood, hurricane, tidal wave (tsunami), typhoon, etc., and also if arrangements are sought to cover several contingencies. Although they may be jointly administered to save on administration charges, each contingency is an independent event requiring separate funding.

55. The levels of compensation that the arrangement is intended to provide also need to be carefully specified. This is really no different from structuring any other insurance and reinsurance programme on a layered excess-of-loss basis (see paragraph 63) except that in this case the contingencies that need to occur before payment will be made are the specifically defined catastrophes.

56. Having defined the contingencies and the level of cover sought it is now possible to consider the various options that may be chosen to fund the costs of the extent of catastrophe protection chosen. The available options will be dictated by the financial ability to bear risk at different levels within a country's financial hierarchy. This ability to bear risk reflects the capability to pay for losses out of revenues, available capital, loans against unencumbered assets and, in the case of governmental schemes, the ability to raise additional funds through taxation or other means.

B. How to determine the local ability to bear risk

57. The need to monitor the ability to bear risk is an ongoing part of any programme to mitigate the impact of catastrophe. When the availability of financial resources is known informed decisions can be made about the levels of loss that may be carried relatively easily, the level above these where mutualization of the loss or purchase of insurance is more appropriate to make a higher indemnity limit affordable, and the maximum limit of indemnity which the available financial resources are able to command. After this point commercial and funded sources of catastrophe protection are beyond reach and one is then reliant upon local, national, regional or international aid to the extent that it can be made available.

C. The variety of methods of insurance that might be considered

58. A variety of methods of insurance and reinsurance might be considered when structuring a catastrophe protection programme. These include the various developments of recent years, to which the description of "alternative insurers" is often attributed because they are new and have been developed outside the

established traditional insurance markets. The "alternatives" still follow the same principles as traditional insurers but are able to take advantage of lower tax regimes and more flexible regulation. They offer products designed, mostly for major international commercial enterprises and insurers, to manage the time profile of expenditure for premiums and also admitted claims which result in a liability to make a payment or series of payments in the future. Ultimately the claims to be paid are of the same amount as would be payable by conventional insurers so the premiums and investment income thereon must equate to the same figures. As claims generally account for more than 80 per cent of the overall cost of insurance, the savings that "alternatives" might offer are proportionately small; they are, however, worthwhile where very large expenditures are regularly made for insurance cover.

59. At the individual corporate and government level a basic decision is whether to carry the risk oneself or to transfer it to some other entity in exchange for a payment. The government has the advantage of being able to curtail the choice for individuals and corporations under its jurisdiction, compelling its citizens to make provision by subscribing to an authorized scheme that may be privately or government administered – common examples are the requirement for compulsory third party motor insurance and, in many parts of the world for citizens to subscribe to a health insurance scheme. The government may also unilaterally increase taxation and provide the catastrophe protection it chooses.

60. Once the decision has been made to insure in one way or another, the choice of alternative approaches will be influenced by the number of participants who locally wish to take such action and whether a market exists locally for catastrophe risk transfer. Participants in such a market would be commercial insurers, mutual associations and government-administered schemes.

61. Where commercial insurers are unwilling at any price to provide cover for some types of catastrophe the government is involuntarily drawn into the arena as insurer of last resort. Once the individuals' and businesses' own private resources are exceeded by the cost of catastrophe damage, citizens will have nowhere to turn to except the government to provide for reconstruction.

62. An example of this situation has been provided in the United Kingdom where in 1992 international reinsurers withdrew cover for terrorist attacks. As a result local direct insurers were forced to make a drastic reduction in the maximum limits of indemnity for which they could offer cover since they had to ensure that claims would not exceed their own capacity and ability to pay. A terrorism exclusion clause was therefore introduced by all insurers for claims in excess of these limits. The Government realized that "it was imperative that they should have stepped in as reinsurer of last resort once it became clear that the reinsurance markets' own capacity was likely to become exhausted"[4] because of the potential for damage to the United Kingdom economy if businesses were uninsured. The Government therefore worked with the United Kingdom insurers' industry body, the Association of British Insurers (ABI) in establishing a specialist reinsurer for United Kingdom terrorist risks to which all insurers writing United Kingdom property business subscribe. The objective is to ensure that cover for terrorist damage continues to be available. Separate additional premiums are charged by insurers to clients for this cover. The specialist reinsurer "Pool Re" is a mutual operated by the ABI. The Government guarantees that it will provide funds where claims would otherwise exhaust the resources of "Pool Re", enabling the latter to operate without a capacity limit. Such schemes are necessarily long term in operation, the Government making up the shortfall in insurers' funds following a catastrophe. In periods when insurers' funds have been restored the Government receives premiums. Premiums are adjusted so that over a period of many years the Government makes neither a profit nor a loss. For such a scheme to operate, premiums must be allowed to adjust to the true long-term risk cost. If premiums are subject to price controls that hold them at artificially low levels the Government will never recover its claims payments and will then effectively be subsidizing such catastrophe cover from taxation.

D. Availability and capacity at each level of exposure

63. To make an informed choice of the measures that can be implemented to provide compensation for catastrophe it is necessary to construct an accurate picture of currently available national and international protection. This will identify the extent to which non-availability of cover exists and so indicate where the introduction of new solutions is necessary. National and international insurance brokers can advise on the availability of cover. Major international insurers and reinsurers will also be able to advise on their own capabilities but may not be completely informed about the facilities their competitors can offer. Moreover, such an approach will identify where it may be beneficial to introduce alternatives to available existing catastrophe protection.

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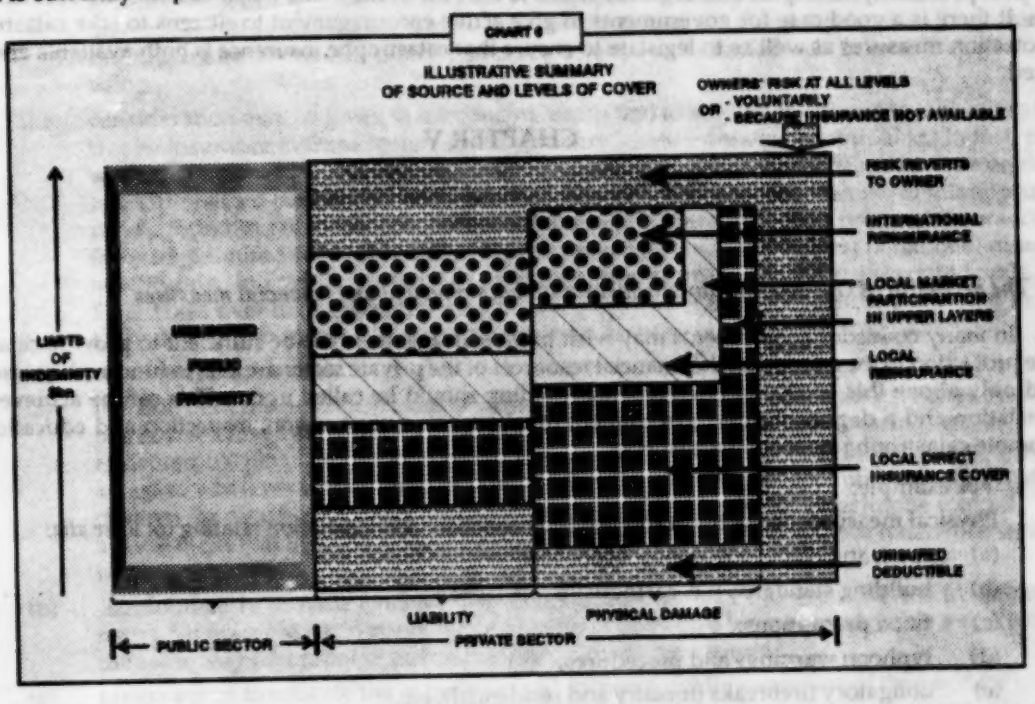
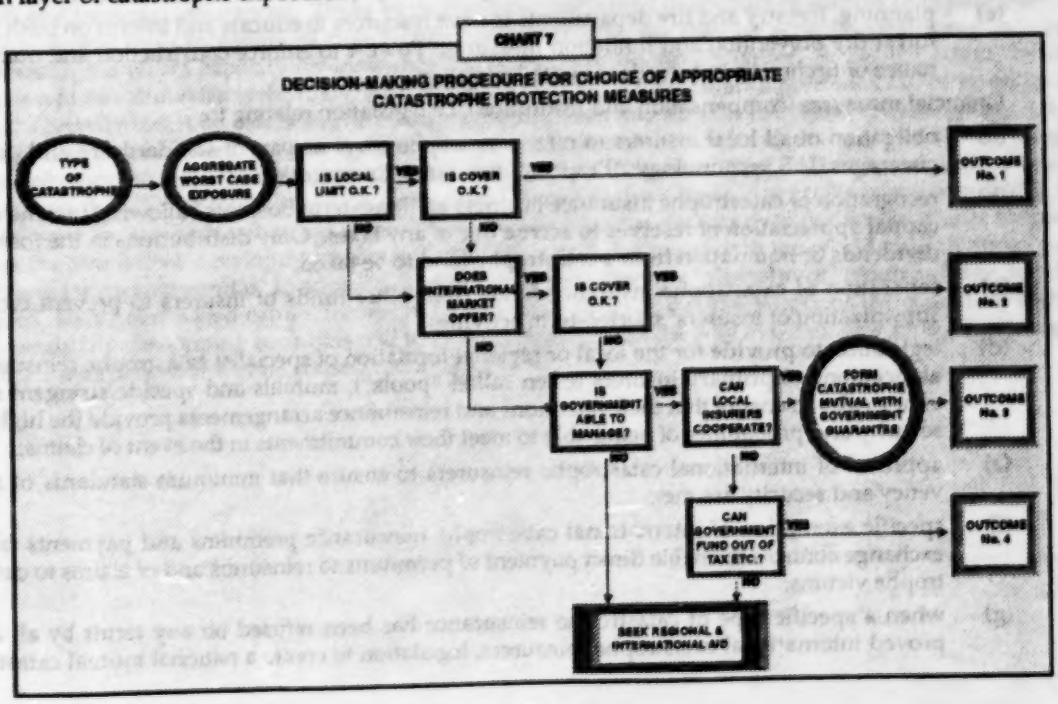
[4] Business Insurance, November 1993.

Chart 6 illustrates how a picture of the sources and levels of cover available to the local market can be constructed. This type of analysis identifies the values which losses must exceed as a result of the designated catastrophe before the next source of compensation is called upon to contribute up to its contractual maximum. By this it can be determined where action should first be taken to establish schemes because there is currently no protection.



• It also allows a structure to be developed where the maximum financial liability of each component is known in advance. Mechanisms to provide financing of such known components may be put in place to be actuated should the contingency occur.

64. If each type of catastrophe to which a territory may be exposed is taken separately and a summary made of available, or required protection on a layered basis, this will automatically divide the catastrophe cover into measurable units. This enables decisions to be taken to arrive at the most appropriate cover for each layer of catastrophe exposure.



65. As chart 7 (page 15) setting out decision-making procedures demonstrates, in the absence of a local insurer or mutual organization to offer protection against catastrophe, the citizens will look to the government for assistance in such an event sooner than if some measures offering protection are already in place. The government role in promoting provision of catastrophe protection is inextricably linked to its unenviable responsibility to step in and organize restitution in the event that a major catastrophe occurs. As a result there is a good case for governments to give active encouragement to citizens to take catastrophe protection measures as well as to legislate to ensure that catastrophe insurance is both available and utilized.

CHAPTER V

THE ROLES FOR GOVERNMENT

A. The necessity of Government involvement with both physical and financial measures

66. In many countries governments may wish private arrangements to be sufficient to provide catastrophe protection to the extent that the financial resources of the private sector are able to fund such measures, and only above this level that governmental funding should be called upon. This can be achieved by legislation and a degree of direct government involvement in supervision, inspection and education to promote catastrophe protection measures.

For example:

Physical measures (prevention and loss minimization), i.e. legislation relating to: *inter alia:*

(a) town and country planning appraisals;

(b) building standards (i.e. earthquake resistance);

(c) flood precautions;

(d) typhoon warnings and procedures;

(e) obligatory firebreaks (forestry and residential), etc.;

and Supervision such as:

(a) central government or municipal planning approval;

(b) building inspectors;

(c) monitoring of water levels, flood warnings, enforcing maintenance of watercourses;

(d) cooperation within regional weather monitoring organizations. Education and enforcement in protection and securing of moveable objects, and population movement restrictions;

(e) planning, forestry and fire departments to have resources to educate and inform on bush and forest fire prevention and limitation measures. Powers to enforce construction and maintenance of firebreaks in accordance with legislation.

Financial measures (compensation and restitution), i.e.legislation relating to:

(a) obligation of all local insurers to offer catastrophe cover as part of standard fire and perils coverages (U.S. terminology "Property" insurance coverages);

(b) recognition of catastrophe insurance business as "long-term business" allowing income and capital appreciation of reserves to accrue free of any taxes. Only distributions in the form of dividends or liquidation from a catastrophe fund to be taxed;

(c) separation of catastrophe insurance funds from other funds of insurers to prevent cross-subsidization of insurers' shorter-term activities;

(d) legislation to provide for the local or regional formation of specialist catastrophe reinsurers, associations of primary insurers (often called "pools"), mutuals and specific stringent solvency rules to ensure that their retentions and reinsurance arrangements provide the highest security and probability of being able to meet their commitments in the event of claims;

(e) approval of international catastrophe reinsurers to ensure that minimum standards of solvency and security are met;

(f) specific exemption of international catastrophe reinsurance premiums and payments from exchange controls to enable direct payment of premiums to reinsurers and of claims to catastrophe victims;

(g) when a specific type of catastrophe reinsurance has been refused on any terms by all approved international catastrophe reinsurers, legislation to create a national mutual catastro-

phe reinsurer may be the only alternative left to ensure cover continues to be available. To ensure adequate capacity the government may need to guarantee to pay losses in excess of the national mutual catastrophe reinsurer's available assets. If there are no claims then this potential liability of the government will diminish as funds are built up. As the only alternative to being without any form of cover and relying upon voluntary aid in the event of catastrophe, this should not be regarded as a means of providing cover at a cheaper price than the commercial market but more as a catalyst whereby a commercial market can be encouraged to develop;

(h) consideration may be given to introducing legislation to encourage citizens to take out catastrophe insurance in those sectors of the economy where insurance is affordable. In fact, possession of a policy for a minimum amount of catastrophe cover could be made a prerequisite to additional aid payments when a national disaster is declared. An example of this approach can be found in France where farmers are required to have their own policy of insurance in force for a limited amount before any payment can be made to them out of national disaster relief funds. In France, when the cost of losses from a catastrophe exceeds certain levels, the State takes over insurers' responsibilities for payment of the loss. Similar laws exist in the United Kingdom for insurance against material damage as a result of terrorist attack.

Also Supervision such as:

(a) revision of licensing requirements for insurers so as to include the obligation to offer catastrophe cover. This need not require the domestic insurer to carry the risk himself, since it may be reinsured 100 per cent. The purpose of this suggestion is to ensure that the consumer is given access to whatever catastrophe cover exists. The insurer may also act purely as a distribution channel for catastrophe cover offered by a government-sponsored catastrophe mutual. The advantage is that insurers already have in place an appropriate distribution network serving insurance buyers.

(b) requirement to provide evidence that catastrophe insurance has been effected by entrepreneurs, for example when applying for licences to carry on a business, redevelop a site, etc., in the same way that proof of public liability cover is often required;

(c) programmes to educate the population and promote public awareness of the need for catastrophe protection.

67. As a description has now been given of the means to ensure that catastrophe protection is available and offered throughout the local market, some recent innovations in this respect are examined in greater detail in chapter VI. These are being tried out by some insurers in the developed countries as alternatives to conventional reinsurance as a method of accessing risk capital outside of the insurance industry to reduce the volatility of primary insurers' underwriting results. Such developments have exclusively been in the field of reinsurance and wholesale insurance arrangements and have not offered any alternative for retail and personal insurances. These initiatives have attempted to encourage sources of capital outside the traditional insurance markets to subscribe to contracts whereby they are accepting insurance risk, and as a result the world capacity for insurance has been made marginally larger. By securitization, instruments whose value reflects the underwriting results of underlying insurance portfolios can be bought and sold. Capital market investors who are outside the insurance industry make a market enabling insurers to lay off their risks in these markets against the capital backing of outside investors in place of the insurer's own solvency margin. To the extent that this has alleviated any scarcity of insurance risk capital it will have contributed to a lower price for cover in the markets where these new facilities are competing for business. However, other than in the continuing growth of self-insurance by major multinational corporations the alternative developments are still relatively small compared with the world availability of conventional insurance capital. In addition, in order to operate, the new "alternatives" require a large, sophisticated, active and liquid capital market, which in order to write insurance options includes derivatives. Currently few developing countries will have such facilities, but the way in which new innovations could be used if appropriate will be considered in chapter VI.

CHAPTER VI

ALTERNATIVE MECHANISMS TO CONVENTIONAL INSURANCE AND REINSURANCE

A. Insurance futures and options

1. Providing insurers with a "hedge"

68. A great deal of interest in possibilities for securitization of insurance risk has been generated during the past two years as a result of one of the United States futures exchanges' beginning to trade a new insurance futures contract. This is based upon the movement in a quarterly index constructed from the returns of a sample of 15 insurers' loss ratios for premiums in the United States "Property/Catastrophe" category.

69. The name given to the contract by the Chicago Board of Trade is "Catastrophe Insurance Futures", but this does not mean that there has to be a catastrophe such as a serious earthquake or hurricane for the contract to perform. It is in fact the same as any other futures contract, but instead of being based upon a stock exchange index or some other index such as the price of copper, this future is based upon an especially constructed index of United States insurers' quarterly results. Any movement up, or down, in their average loss ratio will result in a corresponding change in the quoted price for the future.

70. Although the insurance future/option can be bought by an insurer to partially hedge his position if part of his portfolio matches the composition of the futures index, one does not have to be an insurer to write or buy an option based upon the insurance futures index and contracts may be simply traded between the professional market makers and speculators. Certainly these instruments have the potential for insurers to access alternative sources of capital and to transfer risk at a fixed cost, but a great deal more development is required before they can be regarded as a practical alternative to reinsurance.

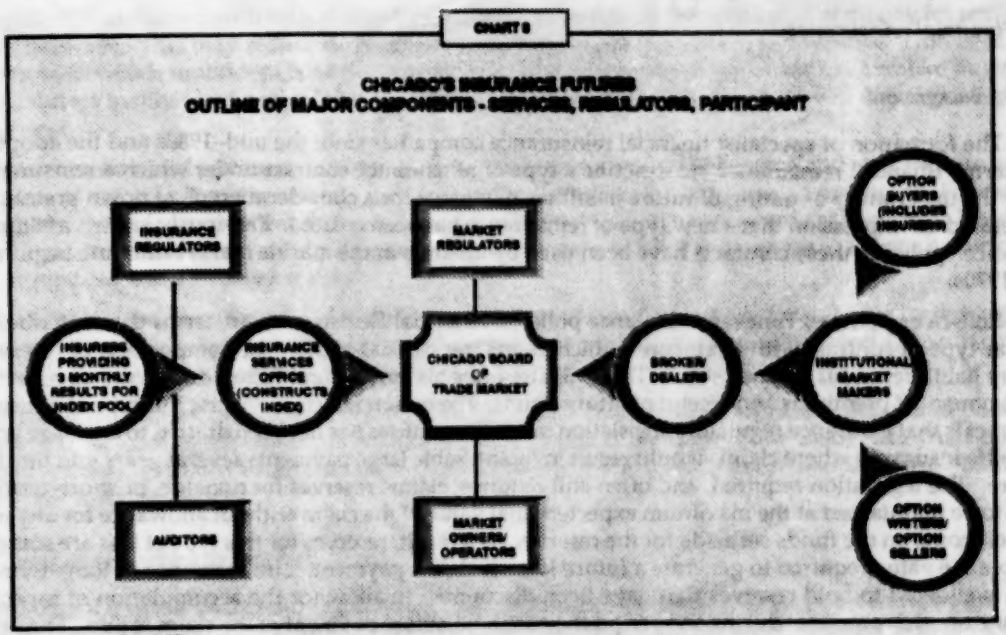
71. As regards the developing countries, the utilization by their insurers of options and futures to hedge their underwriting results, would first require regular quarterly reporting of their results in auditable form to an independent body which would construct the local index. They would also need access to an active futures market where there was sufficient interest to trade these developing country insurance contracts. Implicit in the existence of such a futures market is the existence of a capital market of sufficient size and with institutions interested in taking positions of large enough value to provide an alternative market to conventional reinsurance.

72. Few developing countries can currently offer capital markets that are able to satisfy all of these criteria, or sufficiently frequent and sophisticated insurance reporting to enable an index to be calculated on a satisfactory basis to support futures trading activities. An alternative for countries without exchange control and capital transfer restrictions might be to access the larger regional markets or international markets if they are interested to trade an insurance contract that could provide a hedge for local insurers.

73. Securitization of insurance contracts has for several years been suggested as an alternative to the conventional methods of reinsurance. This is a method whereby blocks of insurance risks could be traded and transferred, utilizing investment capital made available through the financial futures markets

2. How the world's first Insurance Futures in Chicago operate

74. Insurance Futures became a reality in December 1992 when the Chicago Board of Trade (CBOT) began to trade Catastrophe Insurance Futures and Options. This initiative can so far only serve United States insurance risks.



Source: Chicago Board of Trade

75. Reinsurance futures can be used in a variety of circumstances as an alternative to Excess of Loss reinsurance as long as the reinsurer's portfolio reflects the market from which the Reinsurance Futures Index is constructed. The insurer buys a contract on the futures market which fixes the loss ratio in advance. In simple terms the insurer will effectively pay in advance to the sellers of the insurance options/ futures contract a price that reflects the anticipated future loss ratio and in addition a risk premium

76. The future/option is a hedging instrument which, provided the losses on the insurer's own portfolio follow those for the futures index, allows the insurer to freeze the underwriting result for the portfolio at the time the actual hedge is performed. If the losses rise above the anticipated level the insurer earns the same amount on the futures as he would need to pay for the increase in the losses. A more favourable experience causes the insurer to lose on the futures the amount by which the loss payments are smaller.

77. A prerequisite for constructing any futures or options contract is the existence of a recognized market price (such as the exchange rate for a currency) or an index (such as the Stock Exchange Index), which the price of the futures contract can track. To enable insurance futures contracts to be written it is necessary to construct indexes that reflect the loss experience of a group of representative insurers.

78. The catastrophe insurance futures traded on the Chicago Exchange are based upon an index especially prepared by the Insurance Services Office (ISO). A representative sample of insurers (which ISO call the "index pool") submit loss information relating to their catastrophe premiums to ISO. This information is then averaged into an index that reflects the quarterly dollar loss on $25,000 of catastrophe premiums. To prevent any one insurer influencing the index by opportunistic reporting, ISO controls whether, and if so to what extent, that insurer's insurance policies are included in the index. The maximum share to which an insurer's results can be included in the "index pool" is 15 per cent.

79. The purchase of a reinsurance futures contract will not protect an insurer against any loss that may arise from the difference in the underwriting result between his own portfolio and the result for the index.

80. If options are used by an insurer to "fix" or "freeze" his underwriting result at the level indicated by the index when he takes the option out, and a significant part of his portfolio is involved, the strain on liquidity could be relatively heavy, particularly for smaller insurers. This is because the expected value of claims, plus a risk premium for those accepting these options, has to be paid in advance. Only when the option matures and the insurer learns whether the claims have exceeded his expectations will he know whether he has benefitted by entering into the contract. Any amount by which actual claims are lower than estimated will become the profit of the option traders.

81. Options and futures are unlikely to be of any immediate benefit to developing country insurers but their development could lead to further forms of securitization of insurance risk.

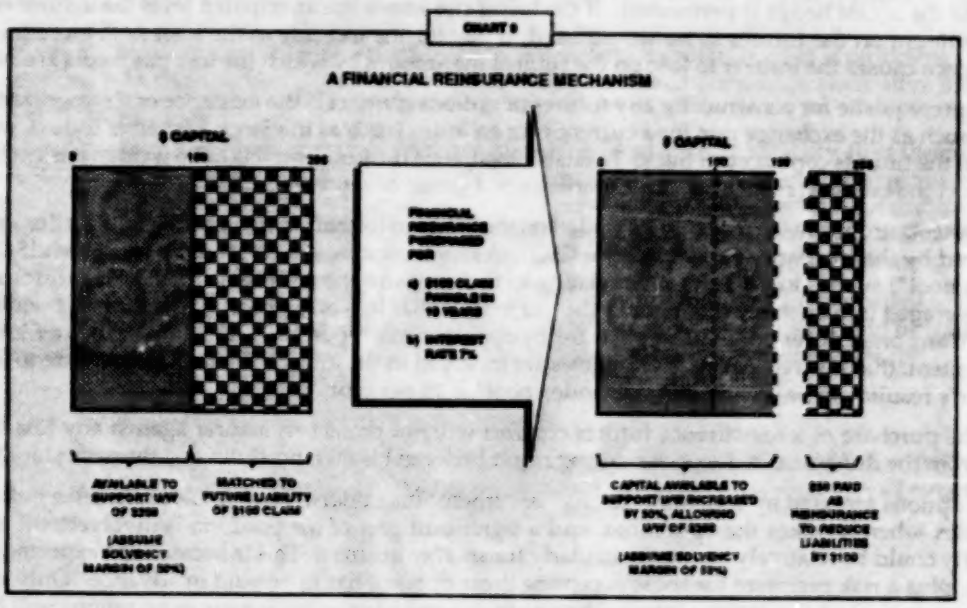
B. Financial reinsurance

1. Background

82. The formation of specialist financial reinsurance companies since the mid-1980s and the adoption of the term "financial reinsurance" to describe a type of reinsurance contract under which a reinsurer takes over the uncertainty of timing of future liabilities payments for a consideration of a known premium has generated an impression that a new type of reinsurance has been created. Previously known as "time and distance" policies, these contracts have been used by insurers in the marine market since the beginning of the 1970s.

83. Roll-over policies, Time-and-Distance policies, Financial Reinsurance are terms that describe a particular type of contract with a reinsurer which an insurer can use to alter the composition of reserves for future liabilities in his balance sheet. This will also alter his current and future cash flows as reflected by the payment of premiums and receipt of future claims. The reason why insurers use this type of reinsurance contract is that insurance regulatory legislation in many countries has not been drafted to envisage types of non-life insurance where claims would result in quantifiable large payments several years into the distant future. The legislation required, and often still requires, claims reserves for non-life, or short-term business to be maintained at the maximum expected final value of the claim without allowance for any investment income on the funds set aside for the reserve. As a result, reserves for this type of loss are sometimes double the value required to generate a future known claims payment. Life assurance or long-term business is allowed to hold reserves that have been discounted to allow for the accumulation of investment income on such amounts during the period they are held before payment of the claim is due. The original non-life legislation did not envisage a structured non-life claims settlement which might entail a claims payment to be made in 20 years' time. It was anticipated that contracts involving such a lapse of time would be long-term business and written under rules applicable to life assurance. Most non-life insurance legislation has not yet been amended to accommodate such practices.

84. A simple illustration demonstrates how Financial Reinsurance releases an insurer's capital to provide more underwriting capacity: In this simplified example it can be seen that the insurer, by paying a premium to a reinsurer to settle a future loss, releases half of his capital which would otherwise be matched to a liability to pay a loss of a known amount in 10 years' time. This allows the insurer to increase his capacity to write more premium income today.



85. Legislation in many countries is slowly being altered to recognize the time value of money for non-life insurers' reserves. This may reduce demand for some basic types of financial reinsurance. However, the flexibility with which individual contracts can be tailored to the needs of the insurer, not unlike buying a futures contract in other businesses for physical firm delivery, will justify the continued use of this type of arrangement.

86. In practice financial reinsurance often involves more than simple discounting and may include varying degrees of risk transfer in relation to the ultimate timing and value of a series of payments. For example the reinsurer may accept a risk that a number of payments will have to be made at some time between 10 and 15 years in the future and that the total amount to be paid will fall somewhere in a range between an agreed minimum and a maximum value.

87. Financial Reinsurance serves an important function in smoothing out results and thus increasing the efficiency of the funds employed. By offering retrospective and prospective funding/spread loss facilities Financial Reinsurance treaties can fulfil this function.

88. Financial Reinsurances are much closer to life assurance, or long-term business sinking fund policies, since there is no contingent event. It is known that a payment will have to be made, but what can be uncertain is the exact timing or final amount. For this reason these insurances are also known as "banking policies" or "funding policies".

2. Developing country applications

89. As far as the needs of developing countries for alternative sources of catastrophe insurance are concerned, Financial Reinsurance is not a substitute to be bought as an alternative to direct primary cover. There are circumstances in which Financial Reinsurance can assist primary insurers to release capital set aside for long-term claims liabilities thus enabling them to increase current underwriting capacity. This could enhance their ability to offer catastrophe cover in their role as direct insurers to the domestic market. Another application of Financial Reinsurance could be in the settlement of a catastrophe claim, say, for a reconstruction project with stage payments spanning a period of years. As well as achieving settlement at a known current fixed price, when the future payments may be for materials and equipment to be paid for in foreign currency, the use of Financial Reinsurance to pay such a loss could also remove the future risk of currency fluctuation.

C. Alternative insurance

1. Background

90. The term "Alternative Insurance" was adopted in the late 1980s to describe a whole range of self-insurance-based services, including various types of captive insurance companies and financial risk management services, often operating internationally and frequently making use of offshore financial centres, which have grown up since the late 1960s. When the very large oil industry self-insurance company OIL was established in Bermuda, to be followed by two other very big association captive insurers XL and ACE (American Casualty Excess Insurance Co.), originally set up to serve the United States' biggest manufacturing companies, this group of companies began to call themselves "the Alternative Market". Originally established to handle the self-insurance of their sponsors' own risks these companies have quickly developed into large international reinsurers of high level stop-loss and excess-loss business and have since been joined by other large reinsurers based mainly in Bermuda and capitalized largely independently of the major international insurers with whom some of them are associated. The whole business of developing a risk financing solution by the use of self-insurance, funding, and captive insurance companies, which may ultimately be reinsured with the old established insurers via the international markets represents the area currently being called "Alternative Insurance".

91. The development and provision of these services is dominated by the major international insurance brokers and some specialist captive insurance and risk management companies. Between them they have been responsible for developing most of the initiatives that have occurred in this sector over the last 30 years. The most recent development during the past two years has been the purchase by several of the major international reinsurers of some of the specialist captive management companies, and the subsequent solicitation of large amounts of outside capital to back the insurers which these companies manage.

2. Developing country applications

92. For the catastrophe insurance needs of developing countries "Alternative Insurance" would appear to contribute at least two possibilities:

- The first is an increase in world catastrophe insurance capacity which is accessible via the normal international reinsurance market mechanisms.
- The second is for developing countries individually or collectively to create their own funding vehicles. This is in principle a variation on the approach of forming local reinsurers or pools to carry the retained element of catastrophe cover, initially owned by local insurers and governments which may wish to employ the management services of the "Alternative Insurance" specialists.

CHAPTER VII

RECCOMENDED ACTIONS

A. Cooperation for risk identification and quantification

93. For countries to be able to assess their requirements to cover Catastrophes, Environmental Impairment and Large Risks and negotiate from a position of best information with international insurers, action in the following areas is required. In addition these steps will enable countries and regions to measure their capacity to bear risk and decide when local mutual arrangements could be more cost effective. The approach will also enable decisions to be made on the introduction of risk control measures.

94. Setting up of formal cooperation between governments, local insurers and business associations to identify the catastrophe risks to which a country is exposed.

95. Assembly of historical records and maintenance of ongoing data on the occurrence of each catastrophe that has affected the country and the immediate region.

96. Assembly of and maintenance of data on the location and value of all property at risk.

B. Insurance industry and government initiatives

97. Investigation of the extent to which local insurers are currently offering cover against the identified catastrophes and of the extent to which such cover is included as standard in all locally issued fire and perils policies.

98. Identification of international insurers intermediaries and markets providing cover against the catastrophes to which the territory is exposed both directly and by means of reinsurance.

99. Audit of local public and private financial resources to determine the maximum local capability to bear risk. Audit of local insurers to determine the extent of their own risk bearing capability.

C. Loss control and prevention in both public and private sectors

100. Assembly and maintenance of information on the extent to which risk control measures are currently applied within the country in order to minimize the effect of each identified catastrophe .

D. Legislation and government action

101. Construction of public works for catastrophe protection and requirement of private industry to implement similar measures for its own relevant activities.

102. Introduction of legislation, to the extent that it is not already in place, to enforce building standards and the application of risk control procedures by public and private enterprise.

103. Introduction of legislation stipulating that the government will not provide aid or compensation for catastrophe damage to the extent that cover could have been effected . Also that no government funding or guarantees will be available for any project where catastrophe cover can be effected unless such cover is maintained in place.

104. Endorsement of the principle that there will be no taxation on expenditure for catastrophe protection or on the investment income of catastrophe insurance funds which is used to increase reserves.

105. Assumption of responsibility by the government as insurer of last resort to provide guarantees and, where required, a further pro-active contribution to enable a catastrophe insurance facility to be created if

there are no commercial insurers willing to cover the risk or available commercial insurance limits are lower than required.

106. Establishment of structures for long-term co-operation between the government and the domestic insurance industry to handle claims for compensation in the event of a catastrophe.

107. Joint initiatives by the government and insurers to legislate and increase insurance awareness to promote improvements in risk management practices.

E. Topics on which further study would seem useful

108. Further work that might help countries in formulating their approach to catastrophic risks could consist, as a first step, in assembling information on catastrophe exposures of specific countries and regions. This would, of necessity, rely heavily on the cooperation of countries in supplying national data on the incidence of catastrophe perils and physical and financial exposure. Subject to the willingness of developing countries to respond and the availability of resources, the following may assist developing countries to manage their catastrophe exposure:

- Development of a database for all developing countries showing the classes of catastrophe to which they are exposed, their return periods and severity.
- Formulation of guidelines and procedures for countries to record and determine values at risk regarding the various classes of catastrophe to which the country is exposed.
- Formulation of guidelines and procedures for countries to determine local ability to bear risk from individual business to national level.
- Development of suggestions for regional and international bodies to cooperate in the research and recording of data on values at risk and ability to bear risk in the case of member countries.
- Survey of governments, insurers and regional associations of developing countries on their willingness and financial resources available to participate in vehicles for global and regional mutualization of catastrophe risks. On that basis it may be possible to estimate the potential capital backing and hence the capacity such vehicles could offer.